

Intel[®] Embedded Graphics Drivers and Video BIOS

Specification Update

June 2007

Notice: The Intel[®] Embedded Graphics Drivers may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request.



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Contents

Revision History	4
Introduction	5
Purpose/Scope/Audience	6
Conventions and Terminology	7
Summary Tables of Current Product Issue Activity	8
Errata	10

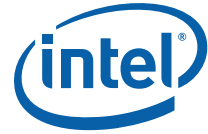
Tables

1	Affected Documents, Related Documents, and Reference Information	6
2	Conventions and Terminology	7
3	Summary Tables Legend	8
4	Errata	8



Revision History

Date	Revision	Description
June 2007	007	Specification update for 7.0 release of the Intel® Embedded Graphics Drivers and Video BIOS.
April 2007	006	PRELIMINARY specification update for the 7.0 Release of the Intel® Embedded Graphics Drivers and Video BIOS. This specification update was formerly titled <i>Intel® Embedded Graphics Drivers and Video BIOS Errata</i> .
December 2006	005	Errata updated for the 6.1 Release of the Intel® Embedded Graphics Drivers and Video BIOS. Change bars indicate areas of change.
September 2006	004	Errata updated for the 6.0 Release of the Intel® Embedded Graphics Drivers and Video BIOS.
June 2006	003	Errata updated for the 5.1 Release of the Intel® Embedded Graphics Drivers and Video BIOS.
February 2006	002	Errata updated for the 5.0 Release of the Intel® Embedded Graphics Drivers and Video BIOS.
October 2005	001	Errata updated for the 4.1 Release of the Intel® Embedded Graphics Drivers and Video BIOS.



Introduction

The Intel® Embedded Graphics Drivers (IEGD) comprise a suite of multi-platform graphics drivers designed to meet the requirements of embedded applications. Featuring Intel® Dynamic Display Configuration Technology (DDCT), the drivers run on the following Embedded Intel® Architecture (eIA) chipsets:

- Mobile Intel® GME965 Express chipset
- Intel® Q965 Express chipset
- Mobile Intel® 945GME Express chipset
- Intel® 945G Express chipset
- Intel® 915GV Express chipset
- Mobile Intel® 915GME Express chipset
- Mobile Intel® 910GME Express chipset
- Intel® 855GME chipset
- Intel® 852GME chipset
- Intel® 852GM chipset

The IEGD supports four types of display devices:

- Analog CRT
- LVDS flat panels
- TMDS DVI displays
- TV Output

The IEGD is designed to work with fixed-function systems, such as Point-of-Sale (POS) devices, ATM machines, gaming devices, etc. It can be configured to work with various hardware and software systems and supports both Microsoft Windows* and Linux* operating systems, including embedded versions of these operating systems.

The Intel Embedded Graphics Suite consists of both the IEGD and a Video BIOS (VBIOS) component. These two components are configurable and work together to provide a wide range of features. This document provides information on configuring and using both the IEGD and the VBIOS.

The IEGD provides the following features:

- Enhanced VBIOS support
- Dynamic Port Drivers
- Support for Dual Independent Head (DIH) displays
- Support of a Universal INF file
- EDID and EDID-less display support
- Display discovery and initialization
- Direct 3D* support



- Installer/Uninstaller GUI for Microsoft Windows
- Runtime configuration GUI for Microsoft Windows and Linux

Purpose/Scope/Audience

This document is a compilation of Errata. It is intended for those who need to interface with the graphics subsystem. This includes, but is not limited to: platform designers, system BIOS developers, system integrators, original equipment manufacturers, system control application developers, as well as end users.

This document may also contain information that was not previously published.

This document provides information on open errata in all supported IEGD packages for Version 7.0 of the IEGD product. It includes information on the following packages:

- Linux
- Microsoft Windows 2000*, Windows XP, Windows XP Embedded*
 - DirectX* 8.1 (DirectDraw* and Direct3D*)
 - DirectX 9 (DirectDraw and Direct3D)
- Microsoft Windows CE 5.0 and 6.0
- VBIOS

Table 1. Affected Documents, Related Documents, and Reference Information

Title	Number
<i>Intel® Embedded Graphics Drivers for Embedded Intel® Architecture-based Chipsets Product Brief</i>	315587
<i>Intel® Embedded Graphics Drivers and Video BIOS User's Guide</i>	274041
<i>Intel® GME965 Express Chipset Family Datasheet</i>	316273
<i>Intel® 965 Express Chipset Family Datasheet</i>	313053
<i>Mobile Intel® 945GM/PM/GMS Express Chipset Datasheet</i>	309219
<i>Mobile Intel® 915PM/GM/GMS and 910GML Express Chipset Datasheet</i>	305264
<i>Intel® 915G/915GV/915P Express Chipset Datasheet</i>	304467
<i>Intel® 855GM/GME Chipset Graphics and Memory Controller Hub (GMCH) Datasheet</i>	252615
<i>Intel® 852GME Chipset GMCH and Intel® 852GM Chipset MCH Datasheet</i>	253027
<i>Intel® 845G/845GL/845GV Chipset Datasheet: Intel® 82845G/82845GL/82845GV Graphics and Memory Controller Hub (GMCH)</i>	290746
<i>Intel® I/O Controller Hub 6 (ICH6) Family Datasheet</i>	301473
<i>Display Panel Debugging with the Intel Graphics Memory Controller Hub</i>	305964
VESA BIOS Extensions/Display Data Channel Standard, available at the following website: http://www.vesa.org/public/VBE/VBEDDC11.PDF	N/A
This document provides information on the 4F VBE functions, which are supported by the Intel embedded Video BIOS.	
VESA BIOS Extension (VBE) Core Functions Standard Version 3.0, available at the following website: http://www.vesa.org/public/VBE/vbe3.pdf	N/A
Contains information on the VESA BIOS Extension (VBE) specification for standard software access to graphics display controllers that support resolutions, color depths, and frame buffer organizations beyond the VGA hardware standard.	



Conventions and Terminology

Table 2. Conventions and Terminology

Term	Definition
Errata (plural) Erratum (singular)	Errata are design defects or errors. These may cause the Intel® Embedded Graphics Drivers' behavior to deviate from published specifications. Hardware and software designed to be used with any given release must assume that all errata documented for that release are present on all devices.



Summary Tables of Current Product Issue Activity

Table 4 shows the [Errata](#) that apply to the IEGD product. Intel may fix some of the [Errata](#) in a future release of the software as noted in [Table 3](#). [Table 4](#) uses the codes listed in [Table 3](#).

Table 3. Summary Tables Legend

Status Indicator	Column	Definition
X	Driver Version	Indicates that an erratum eXists
Plan Fix	Status	This erratum may be fixed in a future release.
Fixed	Status	This erratum has been previously fixed.
No Fix	Status	There are no plans to fix this erratum.
A change bar to the left of a table row indicates an item that is either new or modified from the previous version of this Specification Update.		

Table 4. Errata (Sheet 1 of 2)

ID	Driver Version	Package	Errata	Status	Page
	7.0				
2001613	X	Windows 2000, Windows XP	Upgrading IEGD driver with ATI graphics drivers loaded may cause errors	Plan Fix	10
2126050	X	Other	SUSE10 may experience a blank screen after loading grub in VBIOS default for Intel 965 chipset-based platforms	Plan Fix	10
2141445	X	Windows XP	Rotation with D3D applications cause system reboot	Plan Fix	10
2153846	X	Linux, Windows XP	H-pos and V-pos attributes not working on Integrated TV Out	Plan Fix	10
2221860	X	Windows XP	Display Mode Table has missing modes on Windows when switching from Twin to Single/Extended mode	Plan Fix	11
2328508	X	Other	Windows CE D3DM does not implement Vertex Processing emulation	Plan Fix	11
2440079	X	Windows XP	3D Mark* may cause system hang or reboot on Intel 965 chipsets and IEGD VBIOS	Plan Fix	11
2441300	X	Windows XP	Vertical lines may be seen in video playback or any other time (DD, D3D, ...) when display is rotated	Plan Fix	11
2441301	X	Windows XP	IEGDGUI errors with "Internal Error Detected!" when the IEGD configuration is set for Extended mode without setting it in Display Properties	Plan Fix	12



Table 4. Errata (Sheet 2 of 2)

ID	Driver Version	Package	Errata	Status	Page
	7.0				
2442739	X	Linux	On Intel 852 and 855 chipsets the second overlay becomes blank when the clone display is in panning mode	Plan Fix	12
2442814	X	Windows XP	Volume textures are not currently supported on Gen4 (965)	Plan Fix	12
2446402	X	Windows XP	Resolution 1024x1280 not available when rotating DVI flat panel of 90 or 270 degrees	Plan Fix	12
2447565	X	Windows XP	Some attributes values (which require set_mode) aren't holding after reboot	Plan Fix	13
2448308	X	Linux, Windows XP, Windows CE	CRT display detect does not work on the Intel 852 and 855 platforms - CRT always enabled	No Fix	13
2448617	X	Windows XP	Intel 945GME memory size improperly set for 3D which may cause the 3D applications to run out of graphics memory prematurely	Plan Fix	13



Errata

1. Upgrading IEGD driver with ATI graphics drivers loaded may cause errors

Reference #: 2001613

Driver: Graphics

Version: 7.0

Package: Windows 2000, Windows XP

Resolution: Unload ATI driver, install IEGD driver, then install ATI driver.

Status: Plan Fix

2. SUSE10 may experience a blank screen after loading grub in VBIOS default for Intel 965 chipset-based platforms

Reference #: 2126050

Driver: Graphics

Version: 7.0

Package: Other

Resolution: None

Status: Plan Fix

3. Rotation with D3D applications cause system reboot

Reference #: 2141445

Driver: Graphics

Version: 7.0

Package: Windows XP

Resolution: Workaround: Recommend to not do rotation in 3D as it is not a supported feature at this time but will be added at a future release.

Status: Plan Fix

4. H-pos and V-pos attributes not working on Integrated TV Out

Reference #: 2153846

Driver: Graphics

Version: 7.0

Package: Linux, Windows XP

Resolution: None

Status: Plan Fix

**5. Display Mode Table has missing modes on Windows when switching from Twin to Single/Extended mode**

Reference #: 2221860

Driver: Graphics

Version: 7.0

Package: Windows XP

Resolution: If you start the system in TWIN, and then go to Extended or Single, you will need to reboot and start in the new Extended or Single mode and then the other modes will be available.

Status: Plan Fix

6. Windows CE D3DM does not implement Vertex Processing emulation

Reference #: 2328508

Driver: Graphics

Version: 7.0

Package: Other

Resolution: Windows CE does not provide a “default” software emulation for Vertex Processing functions (“Transform” and “ProcessVertices”) like XP and other Windows OS. The graphics driver must supply the capability and there is none in the IEGD Windows CE D3DM Driver currently. The workaround is to not use the Vertex Processing functions offered by D3DM as they will not work currently. In a future release, software emulation or hardware acceleration (if available) will be used.

Status: Plan Fix

7. 3D Mark* may cause system hang or reboot on Intel 965 chipsets and IEGD VBIOS

Reference #: 2440079

Driver: Graphics

Version: 7.0

Package: Windows XP

Resolution: Use the GMA VBIOS instead of the IEGD Video BIOS on Intel 965.

Status: Plan Fix

8. Vertical lines may be seen in video playback or any other time (DD, D3D, ...) when display is rotated

Reference #: 2441300

Driver: Graphics

Version: 7.0

Package: Windows XP

Resolution: When the display is using rotation, the overlay for video cannot be used. As a result, the backbuffer is using blend to copy and rotate the backbuffer to the frontbuffer. When this copy is occurring it is writing directly on the frontbuffer (framebuffer) which is being displayed. As a result, the vertical lines that display are due to tearing as the scanline of the display passes the image being copied.

Status: Plan Fix



9. IEGDGUI errors with “Internal Error Detected!” when the IEGD configuration is set for Extended mode without setting it in Display Properties

Reference #: 2441301

Driver: Graphics

Version: 7.0

Package: Windows XP

Resolution: You must first enable Extended mode from Display Properties before accessing the IEGDGUI through the Advanced button or running the IEGDGUI utility when the IEGD configuration is initially set for Extended mode. IEGD is currently unable to set the proper settings that Display Properties sets when selecting Extended mode.

Status: Plan Fix

10. On Intel 852 and 855 chipsets the second overlay becomes blank when the clone display is in panning mode

Reference #: 2442739

Driver: Graphics

Version: 7.0

Package: Linux

Resolution: For Intel 852 and 855 chipsets, avoid video overlay and panning by making the primary screen resolution match the smaller secondary screen's resolution.

Status: Plan Fix

11. Volume textures are not currently supported on Gen4 (965)

Reference #: 2442814

Driver: Graphics

Version: 7.0

Package: Windows XP

Resolution: By design, this release of IEGD does not yet support volume textures. Please do not use them. During the Pixel Shader 2.0 test, 3DMark03* displays an error “Unable to create volume Texture.” This feature should be added in a future version.

Status: Plan Fix

12. Resolution 1024x1280 not available when rotating DVI flat panel of 90 or 270 degrees

Reference #: 2446402

Driver: Graphics

Version: 7.0

Package: Windows XP

Resolution: If the “Hide modes that this monitor cannot display” box on the Display Properties, Advanced, Monitor tab page is checked, Windows filters off the 1280 x 1024 (and others) when rotated to 90 or 180. If you want to rotate these modes, uncheck that box.

Status: Plan Fix



13. Some attributes values (which require set_mode) aren't holding after reboot

Reference #: 2447565

Driver: Graphics

Version: 7.0

Package: Windows XP

Resolution: Some attributes set real-time with the IEGD GUI will not persist through a reboot. Examples are TVFormat, and Overscan. There are two workarounds:

Either re-check the OverScan button with the IEGDGUI after the system reboots, or set the options in the inf and reinstall so the options don't have to be enabled after every reboot.

Status: Plan Fix

14. CRT display detect does not work on the Intel 852 and 855 platforms - CRT always enabled

Reference #: 2448308

Driver: Graphics

Version: 7.0

Package: Linux, Windows XP, Windows CE

Resolution: The display detect hardware capability on the Intel 852 and 855 chipsets is not reliable. To workaround this issue, the driver will enable the CRT port by default if it is in the port order. With Display Detect on and the CRT (port 5) in an active position of the port order, there will be video on the CRT port even if there is no monitor attached. At this time, there is no plan to change the IEGD driver code to change this behavior.

Status: No Fix

15. Intel 945GME memory size improperly set for 3D which may cause the 3D applications to run out of graphics memory prematurely

Reference #: 2448617

Driver: Graphics

Version: 7.0

Package: Windows XP

Resolution: Keep your texture use and other graphics functions to a minimum to avoid running out of memory in D3D applications. Be aware that the artificial memory limitation causes the missing textures in 3DMark03 (Nature and Pixel Shader 2.0 benchmarks) and other complicated D3D applications requiring extensive graphics memory.

Status: Plan Fix

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